Draft Outline for Discussion

ENERGY GUIDE for Municipal Drinking Water Industry

1. Introduction

- Reasons to save energy (rising costs, uncertainty) to set the reasons for the report
- Introduction to energy efficiency and the value of it
- Information about the ENERGY STAR Voluntary Program and the Water and Wastewater Focus
- Introduction to the industry – a *summary* of the industry's trends, the use and costs of energy use, and how they relate (e.g., 15% of the water system costs are for energy)
- Summary of what's in the report

This information will be collected from focus materials, past ENERGY STAR guidebooks, and other sections of the report.

2. The Drinking Water Supply Industry

- Overall structure of drinking water industry within the U.S.[1]
  - number and location of facilities across the U.S., sizes of facilities if available[1]
  - drinking water production over time - has it increased? decreased? quality?
- Overall costs and prices of the water supply system[1]
- Regulatory trends that influence the municipal systems (which also influences above) [1]

3. Process Description Overview

- Description of the main processes involved in supplying drinking water (including collection, treatment, and distribution)
- Includes enough description to enable discussion of energy efficiency measures in section 6, below. Will aid research team's work on sections 5 and 6 as well.

4. Energy Use and Trends of Drinking Water Industry

- Energy expenditures for the industry as a whole[1]
- Energy intensities for the industry as a whole[1]
- Estimation of the energy use by each of the main collection, treatment and distribution processes, relatively and/or absolutely[1]
- Impact of regulatory trends on energy use[1]
- Includes enough information to enable researchers to evaluate quantitatively efficiency opportunities in sections 5 and 6, wherever possible.

5. Energy Management

- Includes main elements of a successful energy management program and corresponding strategies, such as assessing performance and understanding energy and energy efficiency, goal

[1] will provide trends as data is available

setting, creating an action plan and prioritizing, implementing the action plan, and continuing to evaluate and manage energy efficiency.

6. Energy Efficiency Opportunities – Cross Cutting

- Includes energy efficiency measures that are applicable across many industries, such as pumping, motors, compressed air, fans, lighting, HVAC, materials handling, heat and steam distribution
- Each efficiency measure will include a description of the measure, estimated energy savings upon implementation of the measure (potentially derived in part, from section 4, above), cost data, where available, and references to case studies where the measure has been successfully implemented

This section will be derived from a number of sources, including energy efficiency literature, websites, energy efficiency organizations worldwide, vendors, and water supply agencies themselves.

7. Energy Efficiency Opportunities – Process specific

- Includes energy efficiency measures that are process specific, that is, they apply to the collection, treatment, and distribution process described in section 3, above; however, without changing the quality (or potentially increasing the quality) of the water supplied. For example, measures may include fine pore diffusers in ozone contact basins, catalytic ozone destruction units, automatic backwash filters, belt filter presses for solids processing, and head-loss control in the distribution system.
- Similar to section 5, each efficiency measure will include a description of the measure, estimated energy savings upon implementation of the measure (potentially derived in part, from section 4, above), cost data, where available, and references to case studies where the measure has been successfully implemented

This section will be derived from a number of sources, including energy efficiency literature, websites, energy efficiency organizations worldwide, vendors, and water supply agencies themselves.

8. Other Measures (with the possibility to combine into 5 and/or 6, above)[2]

- May include measures that aren't accounted for in 5 or 6, e.g., unaccounted for water, customer metering, water conservation/end use efficiency and water reuse

9. Future Technologies[4]

- May include measures that are not yet commercially available but may be available in the next 5 or 10 years. These will potentially be collected as we research sections 5-6.
- Potential measures could include different levels of treatment for different uses.

[2] This section will be added only if appropriate material is uncovered during our search for commercially available technologies in Sections 6 and 7.

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10. Summary and Conclusions

- Includes a summary of the report, including a summary chart of the measures described in sections 5 and 6.

11. Acknowledgements

- For reviewers, funders, and any others who provided support.

12. References

- Includes all references for the report